Published in English on 5 August 2020

GENERAL OCCUPATIONAL SAFETY AND HEALTH NOTICE FOR OPERATORS OF THE CONSTRUCTION SECTOR

Prepared by the Occupational Safety and Health Department of Ministry for Innovation and Technology (ITM) within the framework of the two-year national occupational safety and health campaign "Focus on the Construction Industry – Occupational Safety First".

2019.

INTRODUCTION

Construction industry is between the most hazardous sectors; in 2018, the highest number of fatal or serious work related accidents occurred in this sector. During the construction works, significant health hazards and risks deriving from the activity and the working environment shall also be considered (exposure to hard physical work, possibility of exposure to dust, noise, and vibrations above the limit values, adverse effects of the outdoor weather conditions, etc.) may cause work related occupational diseases and excessive exposure.

In construction industry, work culture is often below the desirable standards, and the combined effect of the tight deadlines, rush job and unskilled workers further decreases the level of standards in occupational safety and health.

The objective of this publication is to draw attention to the occupational safety and health tasks, to the responsibility of managers, the need to increase the internal control, to develop safety-consciousness of the employees, which can reduce work-related health risks and the number of accidents. An appropriate level of occupational safety and health standards and its durable, long-term maintenance shall be promoted.

The present publication helps to implement working conditions without risks to human health and safety.

A detailed list of related regulations can be found in subpage "Legislation" of the website http://www.ommf.gov.hu.

The photographs presented in this publication were taken during occupational safety and health inspections. (Cover photo: Dernovics Tamás/magyarepitok.hu.)

Further information[1] on this campaign can be found on page *"Construction Industry Campaign 2019-2020"* of the website http://www.ommf.gov.hu,

I. CONDITIONS OF HEALTHY AND SAFE WORK

1. PERSONAL CONDITIONS

Many occupational accidents can be traced back to a lack of occupational safety knowledge and to the employee's lack of appropriate qualifications and experience.
In the scope of personal conditions, we set out the type of work the employee can undertake and the employee is required to have any professional qualifications or experience to perform it.

The employee is allowed to work in a condition suitable for safe work performance.

[1] *http://www.ommf.gov.hu/index.html?akt_menu=569*

An employee can only be employed for a job if

- the employee has appropriate physiological characteristic,
- the work does not affect adversely the employee's health, physical integrity or healthy development (in case of minors),
- the work does not endanger the employee's fertility, foetus,
- the employee does not endanger the health and physical integrity of others and has been examined to be apt for work,
- the employee has the necessary qualifications to perform the work in a safe and manner that does not pose risks to health.

Attention!

No work is allowed to be performed alone where there is a hazard present!

And if the work is performed by two or more employees simultaneously, one of the employees must be appointed to be in charge of the work, and this must be communicated to the others!

Pupils and students participating in practical training do not yet have the necessary practical knowledge and proficiency. Therefore, special attention must be paid to them. They may not use dangerous machines or equipment or may only use them under supervision and may not perform certain works due to their age-related characteristics.

Vocational Qualification

If the work may be hazardous for the employee, the legislation specifies the vocational qualifications and experience required to perform the work.In connection with construction-related activities, the requirements of the relevant regulations[2] shall be respected (e.g. operation of construction material preparation machines, operation of machines for earthworks, loading and transportation, operation of road construction machines, foundations, operation of machines for utilities and maintenance). Further regulations may prescribe qualification requirements for operating certain work equipment. Examples for such equipment are hoists[3], welding equipment[4].

Attention!

Newer, more powerful, modern, but technically more complex machinery may require the employment of technically more qualified experts.

However, in case of certain vocational qualifications, no further examination is required to operate a given machine. Thus, in addition to the certificate of vocational qualification, the machine operator's license is issued on request. The detailed rules for this are also set out in a specific piece of[5] legislation.

---

[2] *Decree No. 21/2010. (V. 14.) NFGM on the qualifications required for the exercise of certain industrial and commercial activities, Decree No. 5/1997. (III. 5.) IKIM on the qualifications required for the exercise of certain industrial, commercial, and tourism activities, Government Decree No. 266/2013. (VII. 11.) on construction and construction-related professional activities*

[3] *Decree No. 47/1999. (VIII. 4.) GM on the issuance of the Lifting Equipment Safety Regulation*

[4] *Decree No. 143/2004. (XII. 22.) GKM on the issuance of the Welding Safety Regulation*

[5] *Decree No. 83/2003. (VII. 16.) FVM on the introduction and rules for issuance of agricultural and forestry machine operators' licenses*

It is important to note that a machine operator's license in itself does not give entitlement to drive a vehicle, and the driving license required for road transport is not sufficient to operate a machine.

Occupational medical fitness test, employability test, ban on employment

An employee may only be contracted for work for the performance of which he/she is medically fit.
The employer verifies the employee's aptitude for work based on the medical examinations specified in the applicable regulation[6]. The form of employment shall also be considered, as different rules may apply, for example, to occasional work in the framework of simplified employment and to work in public employment.
Pursuant to the decree, the job aptitude evaluation shall be conducted by a medical practitioner licensed to provide basic occupational health care services. It is the professional competence of the occupational health medical practitioner to decide, on the basis of the information available, whether the employee can be employed in the given circumstances without risk to his/her health.
During the occupational medical fitness test, the occupational health medical practitioner determines the workload caused by the activities performed in a defined position of the construction site, and whether the employee is able to meet these requirements.

Employees working in the construction industry shall undergo a **preliminary occupational medical fitness test** before starting work. After the preliminary occupational medical fitness test, **periodic aptitude tests** are required at a specified frequency in order to re-evaluate the occupational aptitude of the employee. An **extraordinary aptitude test** is required if there has been any change in the employee's state of health that is likely to affect his/her fitness to safely perform his/her tasks.

Frequency of the temporary occupational medical fitness test:

- once a year for the employees under 18 years of age,
- once a year for the older employees;
- in case of physical and chemical aetiological factors, the exposure of which requires periodic occupational aptitude testing, in accordance with Annex 3 of the applicable decree[5],
- in case of jobs involving activities with high risk of accident, in accordance with Annex 4 to the applicable decree[5],
- once a year for employees exposed to increased mental strain according to Annex 5 of the applicable decree[5],
- once a year for employees exposed to psychosocial aetiological factors, according to Annex 6 of the applicable decree[5].

[6] *Decree No. 33/1998. (VI. 24.) NM on the medical examination of and opinion on fitness for a job or a profession and personal hygiene aptitude*

Extraordinary occupational medical fitness test shall be performed:

- if there has been any change in the employee's state of health that is likely to affect his/her fitness to safely perform his/her tasks without any risk to his/her health;
- after an acute occupational disease;
- after a period of excessive exposure;
- after accidents at work involving unconsciousness or repeated accidents;
- in case of illness or disease of the employee which can presumably derive from reasons at work;
- after 30 days of incapacity for work;
- if the employee receives exposure during an unforeseen event;
- if the employee's work is suspended for more than 6 months due to non-health-related reasons.

The occupational health medical practitioner issues an occupational medical fitness opinion based on the tests, indicating to the employer whether the employee is fit to work, the validity period of the test and the date of the next aptitude test. The doctor of the occupational health service certifies the opinion with his/her own personal medical stamp, as well as with the stamp certifying the legal operation of the service.

For employees using hazardous substances/mixtures (e.g. chemicals containing n-hexane, xylene, toluene) for which **biological monitoring** can be used to monitor the uptake or absorption of the hazardous substance and thereby prevent adverse health effects, the medical test is compulsory. The frequency of the tests required for biological monitoring is specified in the relevant decree[5]. The occupational health medical practitioner may prescribe different frequencies based on the exposure.

In case of **seasonal work and casual work in the scope of simplified employment**, the employee is examined at the initiative of the employer or the natural person looking for employment.
The expert opinion on employability is initiated by the capital and county government offices acting as public employment bodies in the case of municipal **public employment** and by the public employer in case of other public employment before the commencement of the public employment.

The fee for issuing an employability expert opinion is to be borne by the initiator of the examination. An employability expert opinion issued for simplified employment is not a mandatory condition for employment, with the exceptions specified in a specific decree[7], however, an expert opinion issued for public employment is a mandatory condition for the commencement of the public employment.

Further requirements on the medical examination and opinion on fitness for a job or a profession and personal hygiene aptitude are specified in the relevant decree[8].

[7] *Decree No. 33/1998. (VI. 24.) NM on the medical examination of and opinion on fitness for a job or a profession and personal hygiene aptitude*
[8] *Decree No. 33/1998. (VI. 24.) NM on the medical examination of and opinion on fitness for a job or a profession and personal hygiene aptitude*

Special cases must also be taken into account during the employment.

Under working conditions which involve risks to one's health, the **student**'s employment may not exceed the duration sufficient to master the profession. Within the order of the job aptitude tests, the employer shall indicate those job functions in which **minors**[9] may not be employed.

It is **prohibited** to employ minors in job functions, which:

- involves risks to their own health and bodily integrity or that of others beyond what is regarded as acceptable (e.g. working at heights, jobs related to electricity, working next to mobile work equipment);
- involves hard physical work;
- where the effects of working in increasingly demanding work climate apply (heat exposure, work performed in cold work environment);
- involves working under increased mental strain (e.g. periodically repeated pattern of activities carried out under time constraints, activities requiring particular attention);
- work involving hand-arm or whole-body vibration above the preventive limit[10], work performed in noise exposition exceeding a value of 87 dB(A), work under overpressure;
- involving exposure to chemicals that are toxic for reproduction, tumorigenic, teratogenic, mutagenic;
- work involving the use of organic solvents;
- work involving the use of chromium (VI) and chromium (VI) compounds;
- work involving exposure to dust causing pulmonary fibrosis.

Older employees[11] are unfit or fit only under certain conditions, for work in conditions that present certain risks to health or hazardous workloads. **For elderly men** hard physical work performed under heat exposure as well as work in overpressure are prohibited. **Elderly women** may not be employed in jobs consisting of hard physical work, material handling activities, for lifting weights of more than 10 kg, in forced posture (hunching, kneeling, squatting, bent torso, permanent overhead activity) and for hard physical work under heat exposure, with vibration exposure over 2.5 m/s^2 for the hands/arms or above 0.5 m/s^2 for the whole body.

Further requirements on the medical examination and opinion on fitness for a job or a profession and personal hygiene aptitude are specified in the relevant decree[12].

[9] *from labour legislation aspects, minor employees are persons under the age of eighteen*
[10] *Decree No. 22/2005. (VI. 24.) EüM on the minimum health and safety requirements for workers exposed to vibration*
[11] *person reaching the applicable individual retirement age*
[12] *Decree No. 33/1998. (VI. 24.) NM on the medical examination of and opinion on fitness for a job or a profession and personal hygiene aptitude*

Occupational Safety and Health Training

Employees are allowed to perform the work in accordance with the occupational safety and health training, observing the occupational safety and health rules and instructions.

Employees must be informed of the relevant rules, instructions and information as part of the occupational safety and health training. Unfortunately, there were numerous of fatal accidents in recent years due to the improper training of the employees.

Training should be repeated in case of changes in work performance (e.g. role change, introduction of new work equipment, technology, change of regulations).

The training must cover:

- health regulations,
- obligations, rights provided for in occupational safety legislation,
- provisions of internal policies (e.g. fire protection),
- technological, operative, handling and maintenance instructions,
- hazards and risks associated with the work, arising from the local conditions, the manner of their elimination, the expected behaviour in case of emergencies,
- the correct use of the tools, materials and protective equipment,
- traffic-safety and environmental regulations.

Attention!

In the case of outdoor work, employees must be informed of the following:

- *Tick-borne Lyme disease, to make sure the see a doctor right away if any initial symptoms are observed!*
- *Risk of infection through bite from rabid animals or direct contact with rabid animals!*
- *Danger of bee and wasp stings!*
- *Places where vipers may be found!*

Employees must be trained in the following – if possible, with the assistance of an occupational health medical practitioner:

- Prevention of tick bites (closed clothing, avoiding tick habitats, use of repellents).
- Proper and fast removal of ticks pierced into the skin (tick tongs must be provided by the employer to the employees at the place of work).
- The importance of recognizing the symptoms in case of a sting (cockade-like dermatitis around the sting site, moderate fever, muscle pain may occur).
- Necessary measures in case of bee and wasp stings.
- The necessary measures (first aid responders) in case of a viper bite (delaying the absorption of the poison).

At stock farming premises the training provided by the employer must cover the following:

- diseases transmitted from animals to humans,
- methods of protection against gases from manure treatment and storage equipment,
- habits and nature of the animals.

The training must also cover the **aetiological factors** determined in specific pieces of legislation[13], which may affect workers in the course of a given activity:

- biological aetiological factors (bacteria, viruses, parasites, fungi)
- hazardous substances / mixtures,
- manual material handling,
- noise,
- vibrations, etc.

Training sessions shall be held during regular working hours, and shall be repeated periodically as appropriate. The training curriculum has to be prepared by an occupational safety expert. The completion of the training must be recorded in writing indicating the curriculum and signed by the participants.

Employees may not be assigned to independent positions until the acquisition of the required knowledge.

Important!
The risk assessment governs the widest possible exploration of the risks and hazards endangering the health and safety of employees.

Risk assessment provides the basis for the measures (e.g. specification of personal protective equipment, compilation of occupational safety and health training curriculum) aimed at the prevention of work-related accidents, occupational diseases, excessive exposure.

2. MATERIAL CONDITIONS

The level of safety of the tangible assets used for performing the work is critical for occupational safety. The employer must ensure that the appropriate facilities are available for the activity and must provide its employees with work equipment appropriate for the given work.

Drinking water in adequate quantity and quality shall be ensured in accordance with the health regulations, and an easily accessible and duly equipped social room shall also be provided.
Near the workplaces, social rooms, changing rooms and showers, a necessary number of toilets with hand washing facilities shall be provided for the employees in separate premises.

Taking into account the provisions of Section 46 of Act XCIII of 1993 on Labour Safety, first aid equipment or a rescue box adapted to the workplace shall be provided, depending on the hazards specific to the activity and work processes and the number of employees.
First aid equipment and rescue boxes in a suitable quality and quantity shall be kept in a clearly visible, easily and quickly accessible place, protected from contamination. Appropriate information signs shall be installed to inform the employees about their location. Water supply and possibility of washing shall be provided here, as well as a sign shall be placed

[13] http://www.ommf.gov.hu/index.html?akt_menu=532

indicating the name of the first aid responder and contact details of the doctor, ambulance, etc. All used, expired, unusable material shall be replaced.

If it is necessary based on the size of the construction site or the nature of the activity, one or more first-aid rooms shall be designated. The obligation to designate a first aid room applies if more than 50 persons are working on the construction site simultaneously. This room must be labelled[14] as specified in the relevant applicable decree. This room shall be accessible with stretcher – and the injured person on laid on it. First aid rooms must be equipped with appropriate first aid equipment and materials.

Other aspects to consider:

- The name and phone number of the first aid responders at work shall be indicated at the first aid station. If there are more than one shift at the construction site, this information shall be indicated for each shift.
- Drinking water, hand sanitizer in sufficient quantity also for the first aid (soap and, if necessary, industrial hand sanitizer, hand disinfectant) and towel (paper or disposable towel) or hand-drying possibilities shall also be provided in the first aid area. If potable tap water is not available, a closed container with tap or handwashing bowl and drinking water shall be provided.
- As first aid station, it is advisable to designate a room equipped with telephone (e.g. the foreman's office, traffic office) or a room next to the room equipped with telephone.
- The first aid equipment shall be available in a well visible, easily accessible, dirt-free area, usable for first aid purposes. In case of storage in a closed place (e.g. in a cabinet, drawer), the storage area shall be easy to open during work, without tools or keys.
- Stretchers shall be available at locations recommended by the occupational health medical practitioner. The need for stretcher shall be determined by risk assessment.

Both in case of permanent or temporary workplaces, it is important that the work areas and traffic routes are of sufficient width for the traffic and transport tasks to be carried out, free of holes, pits, debris, waste and building material residues. Roads must be clearly marked, regularly inspected and properly maintained. The traffic routes for vehicles and means of transport with built-in power drives shall be led at least in a distance of 1 meter from doors, gates, passages and stairways.

During the construction works, **a protective roof shall be installed above the entrance** to protect pedestrian traffic, and traffic routes shall be designated to ensure safe traffic and human presence. Adequate temperature and lighting shall also be ensured.

[14] *Decree No. 2/1998. (I. 16.) MüM on health and safety measures applicable at workplaces*

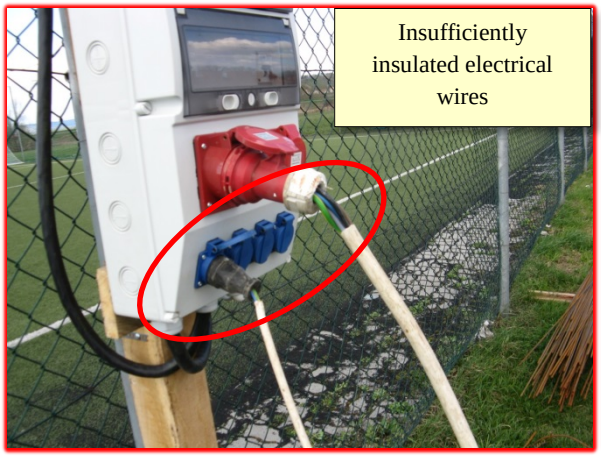
Signs:

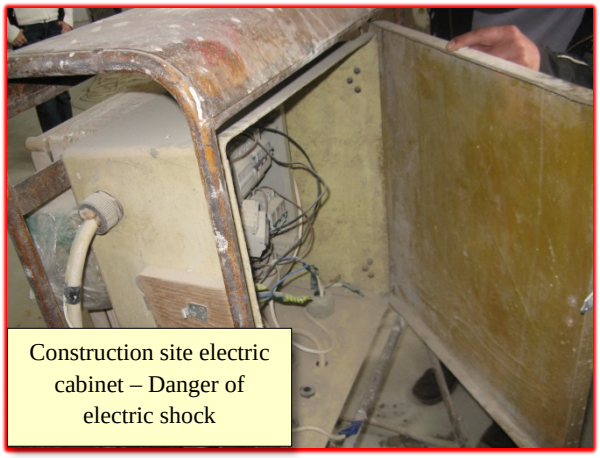
If the hazards present make it necessary, safety and health **signs** must be used to protect employees and those within the zone affected by the work. The detailed rules for this are set out in a specific piece of[15] legislation.

Electricity:

On-site power distribution fittings, especially those exposed to external impacts, shall be regularly inspected and maintained. On the construction site, the electric tools shall be operated from the installation area's electrical system (with a residual current device).

A functional test shall be performed (and documented) when installing the residual current device (RCD) and every month thereafter. This check of the device only shows the functionality of the device itself. The conformity of the entire shock protection system can only be checked by an instrumental test, but this goes beyond the limits of a functional test and is subject to special qualifications and authorizations. If the live parts can be directly touched during the RCD functional test, electrical qualification is required for the test.





An electrician must inspect the facilities and work equipment in a documented form regarding electrical shock protection at installation of the electrical equipment and periodically. Relevant requirements are set out in a specific piece of legislation[16].

The fittings already present before the installation of the construction site shall be identified, checked and clearly labelled.

The electrical overhead lines shall be led in a distance of the construction sites. If this is not possible, the lines shall be de-energized. If de-energization is not possible, fencing or warning signs shall be applied to keep persons and vehicles away.

[15] *Decree No. 2/1998. (I. 16.) MüM on health and safety signs applicable at workplaces*
[16] *Decree No. 10/2016. (IV. 5.) NGM on the minimum level of safety and health requirements for the use of work equipment*

When working near electric overhead lines, the required safety distance must be maintained between the machinery or its components and[17] the overhead lines. If the required safety distance cannot be respected, the employer must take the necessary measures to avoid the risk of electric shock.

If the machinery approaches the electrical overhead line with any part of its part to such an extent that electrical arcing occurs, the driver or operator of the machine shall
a) not leave the control and/or operating post;
b) shall draw the attention of the people nearby by shouting to not to touch the machinery;
c) take the necessary action to de-energize the system.

Publications containing electrical accidents occurred in the construction industry and their lessons learned are available at http://tamop248.hu in the page *"Results / Publications"*[18] (*"Accidents at work related to electricity"; " Moving rolling scaffoldings near overhead power lines".*)

Work equipment

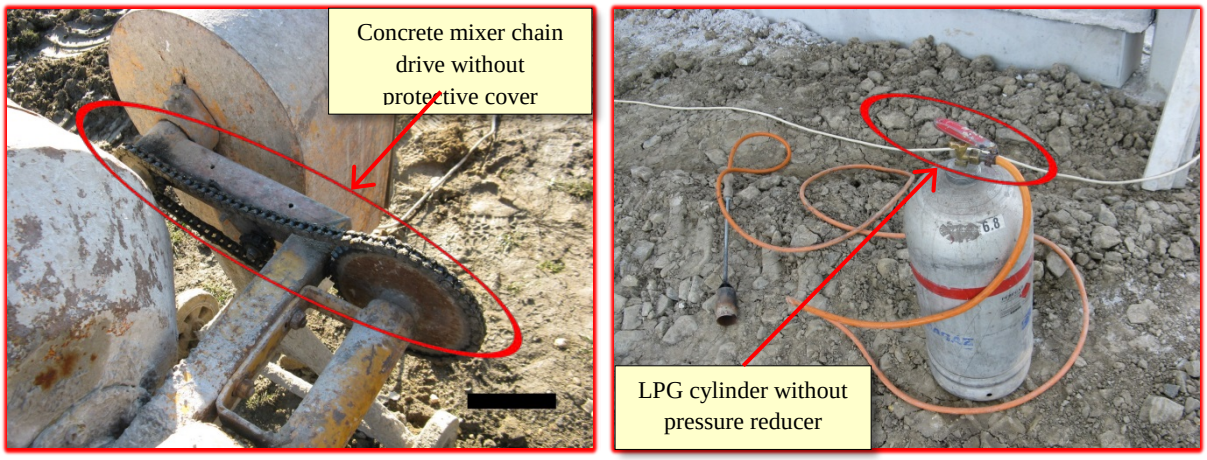
Any machines, devices, tools or appliances used during or in connection with performing work are considered work equipment. Work equipment may only be used for the intended purpose and circumstances. This requirement shall apply to the work equipment in whole or in part as well. Furthermore, it is not acceptable to replace the work equipment - or any part thereof - for a similar equipment with different characteristics (e.g. using a similar-sized screw instead of a safety hitch pin for trailers).

Warning!
While using the work equipment, employees must be prevented from reaching into ***rotating or moving*** *parts, or accessing danger areas.*
The moving parts of the work equipment must be supplied with safety devices suitable for delimiting the danger area or for stopping the movement of the dangerous part before reaching the danger area.

A danger source can be, for example: missing safety covers of screw conveyors, transloading or separating conveyors, hoppers or V-belt drives.

The work equipment must always be installed and used in accordance with the manufacturer's instructions. Adequate space must be ensured for operation.

[17] *Chapter III, article 8.7.34 of Annex 4 of the Joint Decree No. 4/2002. (II. 20.) SzCsM-EüM on the minimum occupational safety and health requirements to be implemented at construction workplaces and during construction processes*
[18] *http://tamop248.hu/2/index.php/eredmenyek/kiadvanyok?start=20*



The **control elements** of the work equipment must be easy to identify. The function of the control elements must be marked appropriately. Avoid operating the machine out of routine; the control elements must be equipped with labels or pictograms clearly marking their functions.

Each work equipment must be equipped - preferably outside the danger area - with control elements suitable for safe operation and complete shutdown.
Each control panel must be equipped with an emergency stop device that can stop any movement dangerous for the employee.

The work equipment must be designed in a way that ensures that it can only be started by intentionally switching on the start equipment, that is, a machine stopped due to power outage must be prevented from restarting after such power outage is eliminated.

Machines and equipment should not be left unattended **during operation**, except in case they are located in a closed, inaccessible area, and their operation or failure during operation poses no danger to persons.

Construction works involve an extremely wide range of work equipment. Because of their hazardous nature and massive use, **machinery (loading, lifting and earthwork machines)** must be further discussed.

Different missing protective covers are danger sources in the case of these machinery as well, but the non-operational status or lack of the safety equipment is also a serious deficiency (e.g. audio signalling devices, brake system, safety belt, devices eliminating/decreasing the risk of tilting/turning over, protection against falling objects).

It is necessary to provide appropriate field of vision (or, if this is not possible, a signalman or work area protection is required), and suitable lighting shall be installed for the work site.
Persons may only be transported in the areas designed for this purpose (e.g. forbidden in stairs).

Vehicles and machinery may only be started if the persons transported have occupied their respective seats.
A well visible sign shall be placed on the construction machinery, which indicates the interdiction to stay within the area of reach of the machine. Work shall not be commenced if there are people in the operating area/range of the machine. It must be ensured that the machinery/vehicle cannot be started by unauthorised persons and the machinery/vehicle needs to be prevented from rolling away.

Before driving on access equipment or getting up on slabs or vaults, the supervisor must make sure that the structure is able to handle the mass of the machinery safely.

For soil quarrying and rock quarrying, the machinery shall be set up and operated in such a way that the machinery's cab could be left in the event of unintentional material crumbling.
If there is a ground wire in the planned working area, the employer must determine the safety requirements of the work and take the necessary safety measures in accordance with local circumstances. In the event of the discovery or deterioration of an unknown ground wire, the operator of the earth-moving machinery must stop the work immediately and notify the supervisor of the work.

No machine shall be installed on a construction site in the dangerous vicinity of an energised, low-voltage or high-voltage wiring harness/overhead wire. The machinery shall not compromise a room containing pressure vessels, pipelines, flammable or explosive substances or other hazardous materials. Machinery with an internal combustion engine or a naked flame must be located outside the hazard zone of the room in which flammable or explosive substances are stored.

In the case of machinery connected to or fixed to building structures or scaffolding, the conformity of the supporting fixture, on the basis of a preliminary inspection, must be certified by the written declaration of the supervisor. In the case of a machinery installed outdoors, the lightning protection of the machinery as well as its wind resistance and protection against unintentional displacement must be ensured in accordance with the relevant regulations.

Construction machinery must be placed on a surface with adequate strength, protected against displacement in such a way that they cannot come into contact with each other, but provide adequate safety distances, cannot cause hazards and have sufficient space to designate a safe path between the machinery. If it is not possible to prevent the machines from coming into contact with each other, the employer must determine in writing, in accordance with local circumstances and practice, the arrangements for communication and cooperation between the equipment and the person responsible for its management.

Unloading points must be designed in such a way that a longer reversing operation is unnecessary to approach them. It is forbidden to stand under a suspended load, in the movement area of the machine or between the loading ramp and the vehicle.

When working with machinery, it may be necessary to engage a control person. In this case, we should be aware that in the case of hand/arm communication, the signals can only be given to the machine operator by the operator, the signal given by others can only be taken into account for distress signals.

The following requirements must be met when using hand signals:

- the hand signal must be accurate, simple, clearly visible, easy to implement, understandable and clearly distinguishable from other signals;
- the person giving the signal gives instructions to the person receiving the signal through arm or hand signals;
- the person giving the signal must be able to monitor the entire course of the work process without endangering herself/himself;
- the exclusive task of the person giving the signal is to give instructions regarding the work process and to supervise the safety of those within the scope of work;
- the person giving the signal must be easily recognisable and must therefore wear one or more conspicuous distinctive features (e.g. jacket, helmet, armband, carry bet). The distinctive features must be vivid and preferably of the same colour and may only be used by the person giving the signal.

Generally, during concreting work on larger structures, a so-called concrete pump is used to achieve higher working levels. The flexible outlet pipe of the concrete pump must not be broken and must be held in such a way that the forces arising from the pressure cannot result in uncontrolled movement. Clogging in the piping system must not be eliminated by increasing the pressure, and the pressure line must not be broken, as this could lead to a severe accident. When blasting or cleaning the concrete pump line and pipeline after the work has been completed, the end of the pipe must be secured and nobody shall be at the outlet end of the pipe.

Attention should be called to the fact that the effective occupational safety and health requirements - or in lack of specific requirements, the requirements applicable to the level of science and technology - must be complied with. It means that a work equipment must

comply with the requirements effective at the time of use, instead of those in effect at the time of manufacturing.

The specific requirements applicable to the work equipment are defined in the relevant[19,20,21] legal provisions.

Commissioning under occupational safety and health standards, periodic safety inspection:

The operating employer is required to issue written instructions for the operation of hazardous facilities, workplaces, work equipment or technological processes (hereinafter: **commissioning under occupational safety and health standards**).

The list of dangerous work equipment is contained in the relevant statutes[22]. However, such list is not exhaustive, and not only the work equipment listed therein are required to be commissioned.

A facility, work equipment, material/mixture, work process or technology (including activities where employees are exposed to physical, biological or chemical aetiological factors) is considered dangerous if the employees' health, physical integrity or safety may be exposed to harmful effects if not equipped with proper protection, as well as work equipment under authority supervision.

Commissioning under occupational safety and health standards is contingent upon having a **preliminary inspection for occupational safety and health conducted in advance.** The performance of this inspection shall be construed as a specialized occupational safety and occupational health activity.

In order to maintain safe technical condition, the **periodic safety inspection** should be performed by the employer every five years, unless more frequent inspection periods are required by law, standards, or the operational documentation.

The rules pertaining to commissioning under occupational safety and health standards and periodic safety inspection are specified by law[23,24].

Checking inspection:

In case of work equipment with no mandatory commissioning under occupational safety standards - however, the safe operation of which may depend on the conditions of installation - after installation but prior to being put into operation, as well as each time it is moved to a

[19] *Decree No. 16/2001. (III. 3.) FVM on the issuance of the Agricultural Safety Regulation*
[20] *Decree No. 15/1989. (X. 8.) MÉM on the issuance of the Forestry Safety Regulation*
[21] *Decree No. 10/2016. (IV. 5.) NGM on the minimum level of safety and health requirements for the use of work equipment*
[22] *Annexes 1/a. and 1/b. of Decree No. 5/1993. (XII. 26.) MüM on implementation of certain provisions of Act XCIII of 1993 on Labour Safety*
[23] *Sections 21-23 of Act XCIII of 1993 on Labour Safety*
[24] *Decree No. 5/1993. (XII.26.) MüM on implementation of certain provisions of Act XCIII of 1993 on Labour Safety*

new site or workplace, the person assigned by the employer - who has the relevant professional qualifications, experience and practice - must check, within the framework of a checking inspection, safe installation and that the operating conditions and circumstances pose no danger to health and are safety.

Periodic checking inspection:

Periodic checking inspection must be performed in order to ensure compliance with the health and safety requirements, to detect any deficiencies in time, and to introduce the appropriate preventive measures.
The method of performing the periodic checking inspection, the work equipment covered by the periodic checking inspection, as well as the frequency and method of the inspection must be defined in writing. The circumstances of operation, the contents of the standard relevant to the work equipment, as well as the specifications of the manufacturer's instructions for use, and the operating and maintenance documents must be taken into account.
The maximum period between inspections may not exceed five years.

The findings of the inspection, as well as any measures must be recorded in the protocol, which should be retained until the date of the next periodic checking inspection, with one copy - in case of an installed work equipment - stored at the premises.
In case the work equipment is used outside the premises, the work equipment should be clearly marked with a sign that includes the date of the latest periodic checking inspection.

3. ORGANISATION MEASURES

In the construction industry, it is not uncommon for employees of different employers to work on the same construction site, often not even performing the same specific activity. To ensure that employees of the different employers do not hinder each other, work should be coordinated so that it shall pose no danger to those who work there and those within the scope of work.

As part of the coordination, the workers concerned, their occupational safety and health representatives and those within the scope of work must be informed, in particular, of the risks to health and safety and of the prevention measures. An important part of the coordination is that before carrying out the construction work, the author of the construction design documentation or the contractor must take into account the different workflows or work phases that are carried out simultaneously or sequentially and determine their foreseeable duration.

Coordination shall be the responsibility of the employer as defined by the parties in the contract or, in the absence of such a stipulation, of the person or organisation exercising effective control or, failing that, the person who has the main responsibility for the workplace, or where no such person exists, the person in whose territory the work is carried out.
It is often asked what regulations must be met when foreign employers work in Hungary. In the case of a foreign employer without a Hungarian tax identification number, the employer is

the person or organisation who exercises effective control or bears the main responsibility for the workplace, failing that the person in whose territory the work is carried out.

Providing the **appropriate number of employees** is of vital importance for the safety of work. Where there is danger to workers, they are not allowed to perform work alone, and only those persons are allowed access to the danger zone who were provided with training covering this topic.

If more than one person work on the same job, a person should be assigned to supervise the work. In this case, the employees must be clearly informed of this person, that is, whose instructions they must follow. It is extremely important when the assigned supervisor is other than the usual foreman, senior, etc.

Accidents of persons present in the work area (bystanders, visitors, customers of the service) must be prevented.

Warning signs, technical solutions should be placed, or maybe guarding, monitoring person should be employed to prevent **unauthorised persons** from getting near dangerous areas.

Work organisation measures should be taken to prevent the adverse effects on the climate. A **rest period** of at least 5 minutes but not more than 10 minutes per hour shall be provided if the workplace climate exceeds 24 °C (K) EH [(Corrected) Effective Temperature][25], or if the workplace is considered cold. Adequate fluid replenishment during heat waves that reach or exceed the heat alert level (the average daily temperature exceeds 25 °C for at least three days) is also of particular significance.

If the temperature does not reach +4 °C in an outdoor workplace or +10 °C in an indoor workplace for more than 50% of the working time, the worker must be provided with a tea with a temperature of +50 °C.

The current information materials published by the Occupational Safety and Health Department of ITM on adverse weather conditions (hot, cold)[26,27] are available on the website http://www.ommf.gov.hu under the Menu *"Hírek"* (News) 12 June 2019, 02. January 2017).

Measures are to be taken to ensure that workers who have suffered an accident or are suddenly ill are transported to medical treatment at any time.
In case of injuries suffered outdoors, if the **wound is contaminated with dirt**, immediately seek medical assistance because there is a risk of tetanus infection.

[25] *Annex II of Decree No. 3/2002. (II. 8.) of SzCsM-EüM on the minimum safety requirements of workplaces*
[26] *http://www.ommf.gov.hu/index.php?akt_menu=172&hir_reszlet=691*
[27] *http://www.ommf.gov.hu/index.php?akt_menu=172&hir_reszlet=547*

II. HARMFUL EFFECTS – AETIOLOGICAL FACTORS

At construction workplaces, significant health hazards and risks arising from the **activity** and the **work environment** must be taken into account. During some activities, the workers are affected by several harmful effects at the same time.
For example, asphalt paving and road construction workers are exposed to asphalt as a hazardous chemical in addition to heavy physical work, and to heat damage and UV radiation in summer.

The construction industry is mostly characterised by excessive – sometimes one-sided – physical exertion carried out under unfavourable (cold, hot, or changing) climatic conditions in a considerable number of cases. The amount of physical work depends on the weight of the materials and equipment moved and the level difference. In many cases, dystonia and repetitive workflows also occur. For those performing intellectual work, an examination of mental and psychological stress is required.
Hazard sources include the effects of the physical environment: hazardous work equipment and work areas, noise and vibration pollution, various optical radiations and electromagnetic fields, high atmospheric pressure, electrical voltage and lighting characteristics, and accident risks.

Among the **physical** aetiological factors, exposure to noise should be mentioned. Noise in the audible sound range causes temporary or permanent changes in the human body, depending on the sound pressure level and the duration of exposure. All of these are collectively referred to as *noise pollution*.

A sonic boom is an extremely strong, short-lived sound phenomenon that primarily causes a change in atmospheric pressure. The spectrum of the sonic boom caused by the explosion is dominated mainly by deep sounds. Noise pollution is considered an accident.

Hearing loss resulting from prolonged noise exposure is nearly symmetrical in all cases. The early stage is called the enhanced exposure stage. As the exposure time increases, hearing loss even affects speech frequency. From the time the impairment has spread to speech frequencies (500, 1000, 2000 Hz), we are talking about an occupational disease.
Hearing impairment due to significant occupational noise exposure jeopardises users of concrete breakers, excavators and compactors, polishers, grinders, shearing machines, drilling and quarrying hammers, chainsaws, protruding guns, workers operating heavy machinery or machinery, and persons operating in their vicinity.

In places where the noise level of machines (e.g. pile driver, brick cutter, circular saw) exceeds the maximum permissible limit value, employees must wear noise protection devices. The rules on the noise exposure of employees are specified by separate[28] legislation. Measures related to noise exposure at work have a key role in the prevention of hearing

[28] *Decree No. 66/2005. (XII. 22.) EüM on the minimum safety and health requirements concerning workers' exposure to noise*

impairment and in the reduction of psychoactive, autonomic nervous system effects outside the auditory organ, which also increase the risk of accidents at work.

The main sources of **vibration loads** from electric hand tools are pneumatic tools (pneumatic hammers, pneumatic grinders, pneumatic drills, pneumatic rammers), certain pneumatic and electric wrenches, chainsaws operated by an internal combustion engine or electric motor, drills, polishers, grinders, riveters and impact drills, that can cause hand/arm vibration damage. Impairments caused by hand-arm vibration occurs in the upper limbs (hands, forearms, wrists and elbows) and affects three organ classes (vascular, nervous, skeletal and joint system).

The whole-body vibration caused by vehicles or machines – earth-moving machinery, wheeled forklifts, crawler tracks, graders, scrapers, dump trucks, forklifts used on uneven terrains – affects the functioning of the body through periodically repetitive changes in the state of various organs and organ systems.

Vibrations around 1 Hz primarily interfere with the *vestibular system*. Vibrations between 3 and 6 Hz primarily affect the organs in the chest and abdomen. In the 60-90 Hz range, we can find the resonance point of the eyeballs. Such vibrations affect the *visual acuity*. Whole body vibration exposure in women leads to gynaecological complaints.

Operators of some tractors, self-propelled machinery, power tools, heavy machinery, and bridge cranes may be exposed to both types of vibration abatement.
Requirements pertaining to the vibration exposure of employees are governed by the[29] relevant law.

The cold/moist work environment (climatic conditions) may result in the development of Raynaud's disease (vascular disorder in the limbs, most notably at the ends of the fingers) or musculoskeletal problems.

The effects of radiation and electromagnetic fields must be taken into account in many areas of construction: the use of electrical equipment and machinery, metalworking including welding, lasers used for material and fine structure testing, industrial radiography, maintenance. Health hazards include eye damage (cataracts) or skin damage (burns), but nervous system complaints (vegetative, peripheral, and central) can also occur.

In the construction industry, we encounter a wide range of hazardous materials: organic and inorganic hazardous substances in the form of gases, vapours and aerosols. In typical construction activities, hazardous materials include many carcinogens: hardwood dust, hexavalent chromium compounds, polycyclic hydrocarbons, asbestos, and asbestos-containing materials. They also include crystalline silica (quartz).

[29] *Decree No. 22/2005. (VI. 24.) EüM on the minimum health and and security standards to be applied to workers exposed to vibration*

It is a common mistake that at construction sites the following is not taken into account during risk assessment:

- the risks arising from solvents,
- the effects of gases and vapours and damage to the eyes during flame cutting and soldering,
- for carpentry services, wood preservatives and wood dust,
- risks arising from insulating materials (fibrous materials, plastics, isocyanate, etc.),
- emissions from vehicles and equipment (CO, occupational carcinogens),
- combined effects (noise, vibration, interaction of ototoxic substances),
- in the construction industry, occupational exposure tests for hazardous materials (workplace air tests and biological monitoring) are usually missing or few targeted tests are carried out, so the actual harm to workers is not known.

Workflows involving large-scale dust generation are typical of the construction industry. The targeted organs of the harmful effects of dusts are primarily the organs of the respiratory system. However, their damage depends not only on the toxicological properties of the dusts, but also on the condition of the respiratory system and the part the exposure reached.

Inhaled asbestos fibre can cause asbestosis, lung cancer, and malignant pleural cancer. Asbestos must not be manufactured or newly installed, but we can still encounter it during the renovation and demolition of old buildings. Areas where asbestos occurs include insulation of steel building frames, ventilation ducts, ceiling tiles, heating systems, insulating boards used in partitions, water and drain pipes and roof tiles. (For more information about asbestos, see the section dealing with asbestos removal.)

Inhalation of fine silica dust can cause silicosis (pulmonary fibrosis), bronchitis and, in some cases, cancer in the long term (even at low, 0.1 mg/m³ concentration). Cleaning metal surfaces with sandblasting poses an increased risk. Exposure to crystalline silica (quartz) should also be considered when drilling concrete.

Dangerous chemicals are most often used by building insulation, tiling, painting and decorating and masonry workers in the construction industry. During industrial works, especially during welding, various irritating gases (nitrous gases) and metal vapours are generated, and, in addition, welding fumes also contain ultra-fine particles.
Cement-based products and products containing a mixture of cement and resins, mostly epoxy resins, are used to repair concrete structures (e.g. bridges, basements, obstacles). Cement and epoxy resin are irritants. Cement may also contain small amounts of sensitising and irritating chromium.

When using hazardous substances/mixtures, employers should make sure the employees are familiar with the Material Safety Data Sheets of hazardous materials/compounds and any other data related to the given hazardous material that may be relevant from a work perspective.

The hazard associated with the substance or mixture characterises their potential harmful effects.
Hazard **labelling** warns the user of a substance or mixture of the existence of a hazard and the need to address the associated risks.

Hazard labelling:
Instead of the previously used R and S statements, the packaging of hazardous materials or mixtures includes **H and P statements** from June 2017.

Hazard statement – H-phrase: The nature of the hazard posed by the substance or mixture is described, including, where appropriate, the degree of risk.
For example H315: Skin irritant.
All hazard statements shall be indicated on the label.

Precautionary statement – P-phrase: Description of the measure(s) proposed to minimize or prevent the adverse effects of exposure resulting from the use of a dangerous substance or mixture.
For example P102: Keep out of reach of children.

Hazard **pictograms**:

Pictogram: Graphic composition that includes a symbol and a graphic element, such as a border, background pattern, or colour, that is intended to communicate the given hazard information.
For example:

Hazard to which the pictogram relates:

- Respiratory sensitisation
- Mutagenic
- Carcinogenic
- Reproductive toxicity
- Specific target organ toxicity
- Hazard of aspiration

It is common that chemicals are not stored in their original container provided and marked by the manufacturer, but in a jar, soft drink bottle, or in an unlabelled plastic balloon. Accidental consumption from this type of containers will lead to serious damage to health.
When chemicals are transferred to a smaller container, their content, nature and the hazards associated with them must always be indicated on them.

Warning!

Packaging materials that are originally manufactured or used for packaging of foodstuff shall not be used for storing hazardous materials or hazardous compounds!

Hazardous material or hazardous compounds stored on the construction site shall not endanger anyone's safety, health or physical integrity and shall not pollute or harm the environment.
Further requirements related to chemical safety are regulated by relevant laws.[30,31]

The sources of **risks deriving from biological factors (diseases that occur)** can be the contaminated soil (Tetanus), wastewater in sewers and drains (typhoid fever, Hepatitis A, the so-called enteric pathogens), stagnant water in water-cooling towers (legionellosis) or biodegradable organics in attics and basements of buildings. Materials and water contaminated with animal (pigeon, mouse, rat) faeces or the removal of contaminated plaster during the demolition of buildings can also be the cause of infection (most often in the form of atypical pneumonia, leptospirosis). Biological aetiological factors lead to the infection of mechanical injuries. Special attention shall be paid to insect bites. The risk of infection is higher especially during demolition works and in damp, humid environments (sewer construction, renovation of sewage networks).

Detailed technical information material on the dangers of bee and wasp stings is available on the website http://www.ommf.gov.hu under the Menu "*Hírek*" (News) 11.06.2019.

For all activities related to biological agents that involve risks to the health and safety of the employee, the employer must:

a. ensure that the employee does not eat, drink or smoke in the workplace or in the premises where risk of biological agents is present,
b. provide adequate protective clothing for the employee,
c. provide adequate washbasin and toilet for the employee, as well as the possibility of rinsing the eyes and, if necessary, disinfecting the skin,

[30] *Joint Decree No. 25/2000. (IX. 30.) EüM-SzCsM on the chemical safety of workplaces*
[31] *Act XXV of 2000 on Chemical Safety*

d. ensure that the employee uses the required protective equipment and handles and stores it properly.

If the employee may be exposed to a risk deriving from exposure to biological agents which endanger his health and safety and for which an effective **vaccination** is available, the employer must offer the vaccination to the employee as a condition of employment. Vaccination requirements are described in separate regulations.[32,33]

- Typhoid fever vaccination shall be given to employees who, during their continuous or temporary work, may come into regular contact with sewage and human faeces (sewer and other utility workers, etc.)
- Hepatitis A vaccination shall be given to exposed employee who may come into regular contact with sewage and human faeces during their work. The range of exposed workers shall be determined on the basis of a risk assessment.
- For persons who, during their work, may suffer injuries contaminated with soil (earthworks), the employer shall ensure continuous and maintained protection against tetanus at all times.

Employees shall be duly informed. Additionally, occupational safety and health training includes measures to prevent exposure (hygiene rules, vaccinations, use of personal protective equipment, tasks of the employees in case of emergencies, etc.).

Long workdays, overtime, bad hygienic conditions, occasional work or working far from the family may entail **psychosocial** risks or increased **mental strain** on the employees.

Most works related to the construction industry are performed outdoors, and therefore, employees are exposed to various **weather conditions** (e.g. cold, hot, UV radiation).
Heat has particularly harmful effects on the human body, which may lead to work accidents or lethal occupational diseases.
Attention should also be called to the hazards of work in cold environment. The adverse effects of work in cold environment are primarily present during work performed outdoors.

Manual material handling

Manual material handling is significant in the construction industry.
Manual handling is the transport or holding of loads by one or more employees, including lifting, unloading, positioning, pushing, pulling, transporting or moving them, which, due to their characteristic features or unfavourable ergonomic conditions, may cause back injuries to workers.

[32] *Decree No. 61/1999. (XII. 1.) EüM on the protection of health of the employees exposed to biological agents*
[33] *Decree No. 18/1998. (VI. 3.) NM on the epidemiological measures necessary for the prevention of communicable diseases and epidemics*

Workload is permissible if the physical stress caused by the manual handling does not deviate durably from the optimal value. The regulation[34] does not contain weight standards for lifting and transportation, as the same load means different stress for different individuals depending on their physique, muscular development and health status.

Excessive workload, manual handling of unevenly distributed, unbalanced loads, improperly executed sequences of movements, forced posture at work, microtraumas caused by work steps, etc. can lead to injuries and diseases of the musculoskeletal system. Most of the musculoskeletal disorders are of orthopaedic or traumatic type.

There are several risk factors that make manual handling hazardous and thus, increase the risk of injury:

- characteristics of the load,
- necessary physical efforts,
- requirements of the activities,
- characteristics of the work environment,
- individual risk factors.

During the medical assessment of the aptitude for the job, the occupational health medical practitioner and the employer, in the work order, must take into account the **individual risk factors**.

Accidents and illnesses must be prevented by eliminating or at least reducing the risks of manual handling:

- Can manual load handling be eliminated, e.g. with material handling equipment (conveyor, forklift)?
- If not, use of auxiliary tools (winches, vacuum hoists).
- Implementation of organizational measures if it is not possible to reduce the risks of manual handling (job rotation, introduction of a break of sufficient length).
- Information of the employees about the risks and negative health effects of manual handling and training on the use of equipment and proper material handling techniques.

III. PERSONAL PROTECTIVE EQUIPMENT

For hazardous work processes or technologies, in order to mitigate risks and reduce harmful effects, personal protective equipment should be determined for each hazard; employees should be provided personal protective equipment, trained on their proper use and obliged to wear them properly.

[34] *Decree No. 25/1998. (XII. 27.) EüM on the minimum health and safety requirements for manual handling of loads involving primarily the risk of back injuries*

Important!
The necessary personal protective equipment should be determined on the basis of a proper risk assessment.
Next, the employer is responsible for laying down in writing the internal procedure for providing personal protective equipment; the performance of this task qualifies as a specialized occupational safety and occupational health-related activity.

The protective equipment is for personal use and has no estimated useful life.

The employer shall provide the protective equipment free of charge, and is responsible for ensuring through maintenance, cleaning, repair or replacement that it is always ready for use and in a proper hygienic condition. Protective equipment that has lost its protective properties shall not be used any longer.

It should be pointed out to the employees during occupational safety and health training that opting out of using protective equipment is not a valid option.
The employer is responsible for informing the employers in advance, on which hazards the protective equipment protects them from, and shall make sure the employees are capable of using the equipment correctly, by providing hands-on training, if necessary.
Upon handing over the protective equipment, the employer should also make the necessary information and the user manual of the equipment available for the employees (in Hungarian).

The minimum safety and health requirements of personal protective equipment usage are governed by the relevant[35] law.

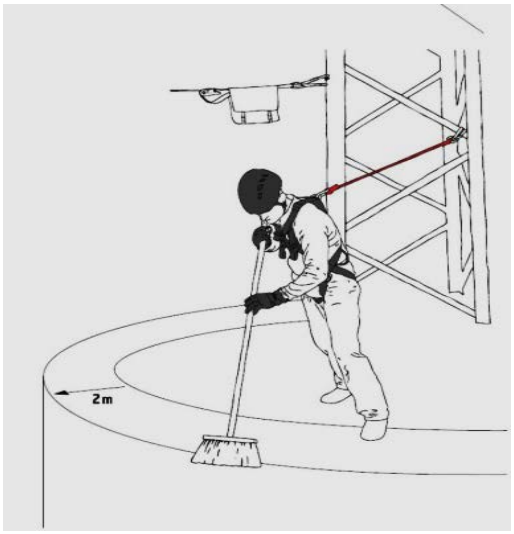
In the construction sites, the risk of falling objects shall be taken into account in almost all work areas and all kind of jobs. Working includes the access and leaving of the construction site, during which work equipment and objects used by other persons (roof tiles, tools) may fall from above. For this reason, the use of a safety helmet is mandatory within the construction site. The only exception to this is industrial and office work performed in indoor workplace that is not threatened by falling objects.

Among the personal protective equipment, personal fall protection equipment must be further detailed. The selection and proper use of these requires increased attention and preparation.

The fall may be limited with methods where the employee's range of motion is limited by the use of personal protective equipment in a way to ensure that the employee cannot reach the boundaries of the level difference and thus, cannot fall.
This is called work positioning, the objective of which is to prevent the employee from falling in situations with falling hazard. The waist belt for working position adjustment is suitable for this purpose.

Attention! ***This waist belt does not provide protection against falling and can even cause serious injuries!***

[35] *Decree No. 65/1999. (XII. 22.) EüM on occupational safety and health requirements applying to the use of personal safety equipment by employees at workplace*

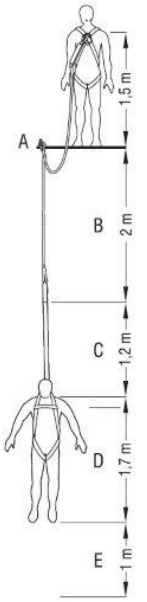


In cases where work is to be performed at the boundaries of a level difference and a fall cannot be excluded, the possibility that the employee will hit the ground or other structures below when falling shall be excluded.
Fall protection must be provided continuously during work!

The role of the personal fall protection equipment is to hold the employee in case of an eventual fall without causing injury.

Thus, the fall itself is prevented, or, if that cannot be ensured, the falling item shall not “hit the ground”. For this, a “fall clearance” is required so that the person falling cannot hit any object or the ground during the fall.
Fall clearance = Free fall distance (A+B) + Distance of deceleration (C+D) + Safety clearance (E=1 meter)

Fall clearance = A+B+C+D+E



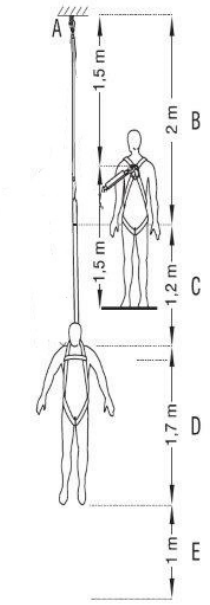
A) a fix kikötési pont elhelyezése: az esés nagyságát csökkentendő, az előírás szerint a használó felett kell lennie, megelőzve ezzel, hogy a leesés ellen védő eszköz a testheveder bekötési pontja alá kerüljön.

B) a kötéllel ellátott energiaelnyelő hossza az összekötő elemekkel, karabinerekkel együtt: a szabvány szerint legfeljebb 2 méter lehet

C) energiaelnyelő nyúlása a varratok felszakadása után: maximum 1,2 méter

D) a testhevederzet bekötési pontja és a használó talpa között a szabványban meghatározott átlagtávolság 1,5 méter, ehhez célszerű még hozzáadni 20 centimétert, mely a testheveder bekötési pontjának elmozdulása a megtartási rántást követően. Összesen: 1,7 méter. Ha a használt testheveder hátsó bekötési pontjának van hosszabbító toldaléka, erre rá kell számolni még 0,3 métert.

E) az esés megtartása után a talajtól való biztonsági távolság: 1 méter



Fall protection is never ensured by a single device, it is always a system of different equipment!
The use of personal fall protection equipment shall be systematically implemented.

Parts of the fall protection system:
- anchor point,
- safety harness,
- connecting elements (D-rings, connecting ropes or straps),
- decelerator devices (fall arrester, energy absorber).

The employer shall install or designate in advance the load bearing structures to which the employee can safely attach the protective equipment.
The work belt, the waist belt for working position adjustment cannot be used in fall protection systems. The personal protective equipment used for fall protection and all components of the system shall, in accordance with the manufacturer's instructions, be tested and inspected as required in accordance with the applicable standards, especially if a fall occurred.

Depending on the sources of danger (e.g. noise, vibration, dust, hazardous substances), additional personal protection methods shall be defined. The impact of adverse climatic factors shall also be considered.
The protective equipment shall always be selected based on the defined limits of use (protection capability, degree of protection, protection class), according to the degree of physical work performed by the employee and the climatic conditions of the environment.

In construction sites where employees are exposed to substances harmful to the respiratory system (carcinogenic, toxic, corrosive, irritating, sensitizing gases, vapours, welding gases, granular or fibrous dust), **respiratory protective equipment** shall be used with a protection capability selected according to the nature and extent of the risks. In construction activities, respirators equipped with filters are commonly used, which may be particulate filters, gas filters, or combined filters (e.g. half mask with particular filter, half mask for protection against gases, or gases and particles).

In case of eye contact with chemicals (corrosive, sensitizing gases, vapours, liquids, airborne dust), damages to the visual system can be prevented by wearing **safety goggles and safety mask**.

Protective gloves protect against the dangers of mechanical and physical effects, static electricity, vibration, chemicals and cold, among other things.

The protection capability of protective gloves made of plastic against the effects of skin damaging substances and its requirements are described in the localized harmonized standards.

If the risks deriving from noise exposure cannot be prevented by other measures, the employee shall wear suitable personal **hearing protection equipment:**[36]

- if the noise exposure exceeds the lower action limit /80 dB(A)/, the employer shall provide personal hearing protection equipment to the employee;
- if the noise exposure reaches or exceeds the upper action limit /85 dB(A)/, the employee is obliged to wear the personal hearing protection equipment provided, as prescribed by the employer.

The actual noise exposure of the employee shall be determined considering the noise reduction capability of the personal hearing protection equipment worn by the employee.

Personal hearing protection equipment[37] with appropriate noise reduction capabilities shall be selected according to the work processes, in a way to eliminate or reduce the risk of hearing impairment to a minimum. Another aspect of the selection of the protective equipment is the working environment where the equipment will be used - e.g. hot and humid, or cold and dusty.

The type of the hearing protection equipment can be: cotton wool, earplugs, earmuffs, helmet with built-in hearing protection.

IV. RISK ASSESSMENT, OCCUPATIONAL SAFETY AND HEALTH DOCUMENTATION

Risk assessment

Risk simply means the combined effects of the possibility and severity of injury or health damage in an emergency. The employer must have risk assessment available, which should include the quality and, if necessary, the quantity evaluation of the risks endangering the health and safety of the employees, with special regard to the work equipment used, the dangerous materials and mixtures, the loads on the employees, and the design of the workplaces.

The following items should be identified during the risk assessment:

- the expected risks, risk sources, risk situations,
- the scope of persons at risk,
- the nature of the risk,
- the extent of being at risk.

During the risk assessment, in case of any presence of aetiological factor under health limit values, work hygiene examinations should be performed to identify the extent of exposition.
The employer is required to perform risk assessment prior to starting the activity, and after that every 3 years - unless otherwise regulated by law.

---

[36] *Decree No. 66/2005. (XII. 22.) EüM on the minimum health and safety requirements for the noise exposure of employees*

[37] *SNR: noise reduction calculated at a level of at least 80% (SNR_{80}) of the applied personal hearing protection equipment*

Risk assessments should be additionally conducted

- in case of a change (e.g. introduction of new work equipment, technology, or new work process) that may have led to the modification of the working condition factors affecting the health and safety of the employees - including work climate, noise, and vibration load, or air conditions (quality and quantity change in gaseous, dust, fibre air contaminants),
- in case the deficiencies of the used activity, technology, work equipment, or work method led to a work accident, excessive exposition or occupational disease.

Psychosocial aetiological factors shall also be evaluated during the risk assessment.
During the construction activities, employees often work permanently away from home, and there is also an increasing number of employees relocated from another country, which justifies the assessment of risks involved and the necessary preventive measures to be taken.
The performance of the risk assessment shall be construed as a specialized occupational safety and occupational health activity.

The risk assessment of construction works shall consider the fact that the work may endanger other activities (e.g. pedestrian and road traffic) or that the works may be endangered by other activities (e.g. the production is not stopped during a manufacturing plant expansion and workers may be exposed to gases harmful to health, vapours, noise, vibration).

Example of a work accident:
During the complete renovation of the 150-year-old church built by the church community members, during the replacement of the suspended gutter, the cornice decorating the church had been displaced and fallen on the whole wall section, carrying away the worker standing on an extension ladder. A piece of the cornice fell onto his chest and the impact was so significant that the worker died. During the investigation of the accident, it was found that the covering of the previously repaired cracks and the improper investigation of the root cause of the cracking, thus, the lack of a proper risk assessment, significantly contributed to the accident.

The relevant provisions of the Labour Safety Act and the contents of the chapter AETIOLOGICAL FACTORS should be taken into account during the risk assessment, and there is also technical guidance available on the website http://www.ommf.gov.hu, under the Menu "Risk Assessment"[38].

[38] http://www.ommf.gov.hu/index.html?akt_menu=221

Health and Safety Plan

The contractor may only start the construction activity on the site if the health and safety plan (HSP) is part of the detailed design documentation.
The HSP shall determine the health and safety requirements for the construction site and work processes, taking into account the characteristics of the given construction site. The plan shall also include the measures to eliminate the hazards of the works listed below:

1. Works with a hazard of landslide, immersion in a swampy area or falling from a height.
2. Work involving exposure to hazardous substances, mixtures or biological agents specified in other legislation, or work subjected to periodic aptitude tests and biological monitoring at a frequency specified on the basis of the working environment or other regulations.
3. Work in an area with a risk of occupational radiation exposure or work with a risk of occupational radiation exposure specified in other regulations.
4. Work near high voltage lines.
5. Working in an area where risk of electromagnetic radiation emitted by a wireless telecommunication structures is present.
6. Working conditions with risk of drowning
7. Working in ditches, tunnels, underground work.
8. Work performed by operators of vehicles transporting overhead lines.
9. Work under caisson, overpressure.
10. Work with the use of explosives.
11. Hard physical work related to the assembling or disassembling of prefabricated elements.

It is important to mention that the HSP is not equivalent to the risk assessment, it is not its repetition or substitution. It is also a common experience that the author of a HSP does not "fill" this document with professional content other than a description of the legal requirements, which is a bad practice.

The Contractor, before installing the construction site, must send the prior notification according to Annex 3 of the Joint Decree No. 4/2002. (II. 20.) SzCsM-EüM on the minimum occupational safety and health requirements to be implemented at construction workplaces and during construction processes to the authority for occupational health and safety competent for the temporary construction workplace, if
a) the duration of the construction activity is expected to exceed 30 working days and more than 20 workers will work there at the same time;
b) the amount of the work planned exceeds 500 man-days.

The up-to-date data of the prior notification must be clearly visibly displayed at the construction site. If other legal regulation also provides for such obligation, the same information needs to be shown only once.

Rescue plan

In case abnormal conditions occur, when the safety regulations for normal operation cannot be complied with, a rescue plan must be drawn up, taking into account the nature, location and extent of the workplace and the effects of hazards, the persons who are within the work range, and the persons required for the rescue operation should be designated. The rescue plan can also be prepared as part of a security, action or any other similar plan prescribed by separate legislation.

V. SPECIAL RULES FOR CONSTRUCTION WORK

1. STRUCTURAL ENGINEERING

For work carried out at height, the use of ladders must be restricted in a way as to minimize risks taking into account the environmental features and with minimum usage time. Do not use damaged, deformed, incomplete ladders. Ladders must be used properly and for their intended use. Accordingly, it is not permitted to supplement the scaffolding with the ladder, use a two-legged wooden ladder as a support ladder, etc.
The legs of movable ladders must be secured against slipping for the whole duration of use by securing the lower parts of the legs or by means of an anti-slip device or any other solution serving the same purpose. The ladder must be used in a way to enable grasping and safely standing on the ladder at all times. Grasping should not be restricted by climbing on to the ladder with a load. The ladder enabling access to the working levels must be selected and positioned so that, in the absence of any other object to hold on to, it should protrude at least 1 meter above the working level to be reached.

Falling of workers or objects must be prevented for the entire duration of the work. For this purpose, work at height can be carried out primarily with suitable equipment or by providing collective technical protection (e.g. lifting platform, safety net, protective grille, scaffolding, mobile mounting scaffolding).

In cases where the working height exceeds 2 m, fall protection must be provided by a dimensioned and properly fixed covering or by a 1 m high three-rowed end board with spacing below 0.3 m, middle boards and handrail or a solution providing equivalent protection. When using a safety net or protective grille, its hole size must not exceed 10 cm x 10 cm.

Lack of collective and individual protection against the risk of falling

There is no protective railing or signalling railing at the edge of the roof

Scaffolding must be solid, sufficiently high and have at least one end board, one middle board and one railing or a solution providing equivalent protection.
When founding the scaffolding, the even load transfer of the scaffolding must be ensured with a sleeper plate or in an equivalent manner. If the scaffolding is to be fixed to an existing structure, it must be made sure in advance whether the existing building is capable of enduring the expected use.
It is important to note that soft iron wire is not recommended and should in fact be avoided when putting up the scaffolding. A system is only as strong as its weakest element!

Defective, damaged, unprofessionally modified elements must not be installed. The support of the access boards must be firm and should not allow rocking. The access boards must be fit to each other without thresholds and level differences.
The scaffolding floor must be made in such a way that, in addition to the stored and moved material mass, it makes it possible to work safely at a working load of min. 2,000 N/m^2. The maximum amount of material that can be moved or stored on the scaffolding floor, the method of storage and the boundary of the storage area must be indicated on the scaffolding in a clearly visible way (e.g. on a sign).

Scaffolding boards may only be extended over a support with at least 0.5 m overlap. Cantilevered overhanging boards must not be used on scaffolding floors, driveways or traffic routes. Scaffolding boards must rest on the support. Do not use gutters, balcony ledges, lightning conductors or building components that do not have sufficient strength and load-bearing capacity or non-scaffolding elements (e.g. masonry material, pallets, two-legged ladders, etc.) to support the scaffolding floor. Openings on the scaffolding floor must not be placed above each other. Scaffolding elements not intended for walking should not be used for walking.

Irregularly set up scaffolding

Dangerously put up ladder

The scaffolding must be inspected by an authorized person:
a) before putting into service;
b) regularly, at specified intervals;
c) after modification or decommissioning, adverse, stormy weather, an earthquake shock, other-than-intended use, removal of certain elements or in any case which may have affected its strength or stability.

The exact time and results of the inspection must be recorded in writing. The scaffolding may only be used after a favourable inspection result has been obtained and in possession of a due permission.

Example of a work accident:
On the top level of the irregularly put up scaffolding, a 4.2-m-long board without intermediate support was nailed as protective railing. The employee lost his balance while working, fell onto the railing, which broke in two and the worker fell to the ground. The employer had the injured person taken home, where he died due to lack of medical assistance.

The floor of a mobile assembly and rolling scaffolding must be placed one above the other across the entire width of the scaffolding so that the distance between them must not exceed 2 meters. Folding doors must not be on top of each other. The working levels should only be accessed from the inside. It is forbidden to access the working levels by climbing up from the outside. The mobile stand must be secured against unwanted moving.

The design, construction, inspection and commissioning under occupational safety standards of construction scaffolding are regulated by the provisions of joint Decree No. 4/2002. (II. 20.) SzCsM-EüM and the provisions of the relevant legal regulations, taking into account the provisions of the related, relevant national standards.

People building the scaffolding must be trained in the special knowledge required, the risks involved in working and their prevention.

Such training should include:

a) understanding and learning about the scaffolding, removal or reconstruction plan concerned;
b) the safe execution of the scaffolding, removal or reconstruction work concerned;
c) the necessary preventive measures to prevent workers and objects from falling;
d) the steps to be followed in adverse, stormy weather conditions and the risks which may endanger the scaffolding;
e) the permissible load-bearing capacity;
f) any additional hazards associated with the construction, the removal or the reconstruction.

The person managing the work and the employees involved must be familiar with the plan for building and removing the scaffolding and the necessary instructions.

It is a common problem that employers dismantle a scaffolding system put up and handed over by others, removes the railings, end boards, end elements, and then fails to rebuild them.

There is a misconception that the responsibility lies with the person who built the scaffolding. The responsibility lies with the employer who lets his employees get on the scaffolding without adequate protection.

Furthermore, it cannot be stressed enough that fall protection must be provided also when building the scaffolding!

In the case of flat and low-sloping roofs (below (20°), if the work is done further than 2 m from the edge of the level difference, a signalling railing for the two-meter boundary line is sufficient. It should be noted that using tape as a signalling railing is unacceptable.

Objects and material may be dropped from the building, scaffolding, etc. only from a safely designed dropping point and only if the endangered area is supervised by a person and access has been made impossible by fencing or blocking. Work may only be commenced if the employee dropping the materials himself has made sure that the overlooking person is clearly

visible and has given a signal to start the dropping. The overlooking person must not be assigned any other task during this work. The supervision point must be designated where the person concerned is not exposed to any danger.

2. CIVIL (UNDERGROUND) ENGINEERING

The safety and health requirements for earthworks must be planned on the basis of geological, hydrological and soil mechanical test data and dynamics calculations. Deviations from this are possible only if propping or slide slopes are applied taking the most unfavourable (loose, granular) soil into account.

The permissible depth of the unpropped excavation pit for unloaded space level, for different soils and slide slopes is as follows:

The soil		Permissible excavation depth (m)						
designation	method of excavation	vertical wall	2/4	3/4	4/4	5/4	6/4	7/4
Loose, granular soil	Dry	0.8	1.0	1.2	1.5	3.0	3.0	
	With open water	0.8	1.0	1.5	2.5			
Compact, granular soil and rollable sludge	Dry	0.8	1.0	1.2	1.5	2.0	2.5	3.5
	With open water	0.8	1.0	1.5	2.0	3.0		
Hard sludge and rollable lean substance	Dry	1.0	1.2	1.5	2.0	2.5	3.3	4.0
	With open water	0.5	0.8	1.0	1.2	1.5	2.0	3.0
Rollable thick material	Dry	1.5	2.0	2.5	3.5	5.0	7.0	7.0
	With open water	1.0	1.5	2.0	3.0	4.0	4.0	4.0
Hard material	Dry	1.7	3.0	4.0	5.0	7.0	7.0	7.0
	With open water	1.0	1.5	2.0	3.0	4.0	4.0	4.0

When performing earthworks:

a) in the case of an excavation pit, a signalling railing must be put up between 0.25 m and 1.25 m depth, and a three-row protective railing beyond a depth of 1.25 m,
b) in the case of a linear facility, a signalling railing must be put up within a residential area between 0.25 m and 1.25 m depth, and a protective railing beyond a depth of 1.25 m,
c) outside urban areas, a signalling railing must be put up beyond a depth of 0.25 m

The edge of the excavation pit within the plane of rupture may only be loaded if the propping has been dimensioned to take on the additional load.

The propping must be such as to protect the stability of the propped soil mass or structure and the physical integrity of the persons working at the site, and the excavated material can be removed from the site and the work can be carried out in the propped work area. If the excavation pit is deeper than 5 meters, or if static and dynamic loads are expected next to the excavation pit, within the plane of rupture, the safety of the propping must be verified by calculation.

In the case of manual earthworks, a 0.50 m wide shoulder must be provided at the edge of the trench. The soil should not be removed from underneath, as this increases the risk of the excavation pit collapsing. The soil must be prevented from falling back into the trench in all cases. Safe movement in an excavation pit (trench) deeper than 1.0 m can be achieved with a support ladder fixed against movement up to a depth of 5.0 m and must be achieved with steps beyond this depth.

The structures of the bridges passing over the propping frames must not be connected to the propping frame. Do not walk on the props, or use them as work stations and for material storage. The holes or spoon-shaped slope failures formed behind the propping must be removed by filling.
Depending on the quality of the soil, the deepening of the propped excavation pit (trench) must be followed by propping. If human work is done in the trenches, the bottom width of the propped excavation pit (trench) must not be less than 0.8 meters.

The importance of a proper slope or propping cannot be overemphasized. This is because it is often impossible to rescue a person trapped in a collapsed excavation pit in time, so a fatal end is almost inevitable.
Prior to the commencement of earthworks below ground level, the unknown or hidden pipelines and wires must be searched in the construction area, and the pipelines and objects found during the works must be identified. If unidentifiable material (hazardous waste, ammunition, etc.) or pipeline is discovered at the construction site, the work can only be continued if their safety has been verified, if necessary by an expert.

Formworks

Metal and concrete structures and their parts, formworks, prefabricated structures or temporary supports as well as supporting walls may only be erected and dismantled under the supervision of an authorized person.

All formwork must be constructed in such a way that it is stable and that formwork can be done safely. When lifting formboards and shuttering panels, it is forbidden to stand in the immediate vicinity of the lifted element. If necessary, the boards must be guided with a rope.

In the case of special formwork technologies (e.g. tunnel formwork, sliding formwork), the work may only be carried out in the possession of written installation instructions, after the employer or the manufacturer has trained the employees in their use. Special (individual), non-standard formwork can be carried out only in awareness of the results of appropriate static calculations.

If the span of the structure, for which the formwork is to be constructed, is 7 meters or more, the work supervisor must be present at all times during formwork.
If the formwork has to be removed before the concrete has completely hardened, the need for this as well as the existence of adequate strength and the additional load-bearing possibilities of the structure must be recorded in the site diary by the supervisor.

The formboards must not be torn off by a lifting device or other mechanical device. Dismantled formboards and shuttering panels must be removed from the work site immediately during and after formwork and, after cleaning and treatment, they must be stored in a professional and safe manner. Nails protruding from formwork and boards and any sharp, pointed objects must be removed or covered.

3. DEMOLITION

The majority of accidents during demolition work is due to inadequate preparation or improper performance of the work. Here too, there is a risk of falling, but the most important risk factor includes the decrease in the strength and stability of the demolished structure, improperly disconnected utility lines and the harmful effect of the material of the structure.

The best way to protect against the risks involved with demolition is careful preparation of the work. During the preparation, the **materials of the structure to be demolished, the method and means of demolition must be determined precisely**.

It is crucial to manage the risks caused by the impact of dust, noise and vibration during demolition work in terms of occupational safety and health.

A plan must be drawn up for the demolition work, which must include the order and the technology of demolition, the necessary equipment and any auxiliary structure to be used.
The demolition workers must be made familiar with the technology and operation used.

Before the commencement of demolition work, it must be made sure that the connecting pipelines have been disconnected and their contents emptied. Prior to demolition, the building

must be inspected for the presence of asbestos-containing materials. If asbestos is found, the relevant legislation[39] must be followed.

If the demolition of a building involves knocking structures over, the residents of the affected area must be notified of the time when this will occur. The area corresponding to twice the wall height should be considered a danger zone. The area in the direction of the knock-over must be emptied and fenced. Traffic and escape routes must be kept clear of debris.

The connected structural parts of buildings must not be demolished on several levels at the same time. It is forbidden to tilt the building or its part by undercutting or otherwise endangering stability. If the work is interrupted, the stability of the building structures under demolition and the remaining building structures must be ensured.

The most problematic area of the construction industry from the aspect of occupational health are the ***demolition and renovation activities***. The working conditions are worse than at the construction of new structures. Often, it only becomes clear during work what the structure of the building to be demolished/renovated is like and what materials it contains. They do not take risks of contagion into account even when demolishing sewage systems or ventilation equipment. The site of demolition-renovation activities is often covered with a foil or sheets to protect the environment or technological equipment in industrial areas while performing works that cause significant dust formation. They do not consider that in such cases lack of oxygen can occur or from unsealed pipes poisonous gases can escape into the closed site in the work area. When cutting elements of iron structures (bridges, production plants) apart with torch cutting, the aluminium-protected surfaces release lead fumes from the coating into the air due to the effect of heat, which can cause poisoning when inhaled. The same can happen when sanding is used for the renovation of bridges. It happens often that the protective measures are skipped during the demolition of constructions containing asbestos, and during the removal of asbestos or asbestos containing products from constructions, facilities or structures.

4. ASBESTOS REMOVAL

The provisions applicable to the protection of employees exposed to asbestos-related risks are included in a separate legislation.

In case of all activities when exposure to asbestos can be presumed, the employer is obligated to perform risk analyses according to the Labour Safety Act[40], which makes it possible to determine the type and degree of exposure to asbestos that affects the employee.

Before and during employment with asbestos exposure, the **medical examination** of and opinion on the employee's **fitness for the job** must be carried out according to the

[39] *Decree No. 12/2006. (III. 23.) EüM on the protection of employees exposed to asbestos-related risks*
[40] *Act XCIII of 1993 on Labour Safety*

requirements of the [41]separate decrees on the medical examination of and opinion on fitness for a job or a profession and personal hygiene aptitude[42] and on protection against carcinogens of occupational origin and the prevention of harm caused by them.

To protect the health of the employees and the environment, when performing asbestos removal activities (demolition of construction containing asbestos, removal of asbestos or products containing asbestos from construction, facility or structure) even works with a smaller degree of asbestos demolition (slate roof demolition) can only be performed after **prior notification**. The instructions of the **work plan** made according to the provisions of the regulation[36] must be followed.

The work plan must include at least the following:

- exact place of work,
- type and expected duration of work,
- obligation to remove asbestos or asbestos containing product prior to the start of the demolition works, unless prior removal is unreasonable – as it would present a greater risk for the employees than leaving it in its place – and an explanation for that,
- demolition technology and the detailed description of the methods used, the used work equipment and the certificates proving their maintenance,
- the necessity for personal protective equipment and its selection criteria,
- list of tools and their description used to protect and decontaminate (cleanse) employees and to protect people present within the scope of work,
- measures to prevent dust generated from asbestos or asbestos containing product to get out of the work site,
- certifying the end of asbestos exposure with an air quality test after finishing the activity,
- a declaration stating that professional knowledge required to perform the activity is provided.

Demolition or removal works with asbestos or asbestos containing product can only be performed under the control of persons having the appropriate professional knowledge, experience and necessary skills. The employer must be entitled to perform activities requiring building authorisation.

By means of a training, among other things the employees must be made aware of the harmful effects of asbestos and the significance of the necessary preventive measures.

---

[41] Decree No. 33/1998. (VI. 24.) NM on the medical examination of and opinion on fitness for a job or a profession and personal hygiene aptitude

[42]Decree No. 26/2000. (IX. 30.) EüM on the protection against carcinogens of occupational origin and the prevention of harm caused by them

In case the employee is exposed to risks arising from asbestos or asbestos containing material, product or activities performed with asbestos containing product, the **employer takes measures** to ensure that

- the **borders** of the work site are clearly **identifiable** and provided with **warning signs;**
- it is only **accessible** to those employees, whose work or obligations makes it necessary to enter the site;
- it is declared as a site where **smoking is prohibited**;
- there is a designated site where the employee can **eat and drink** without being exposed to the risks of contamination by asbestos dust;
- the employee must be provided with the appropriate **personal protective equipment**, and if necessary with **protective clothing**, which
  - must not be taken away from the work site, except for the purpose of cleaning;
  - must be stored separately from street clothing;
- **two separated locker rooms[43], a bathroom, a shower and a toilet** must be available to the employees;
- the **protective equipment** are **stored** at a designated, separated place;
- protective equipment must be **checked and cleaned** after every use, faulty protective equipment must be repaired or replaced before they are used again;

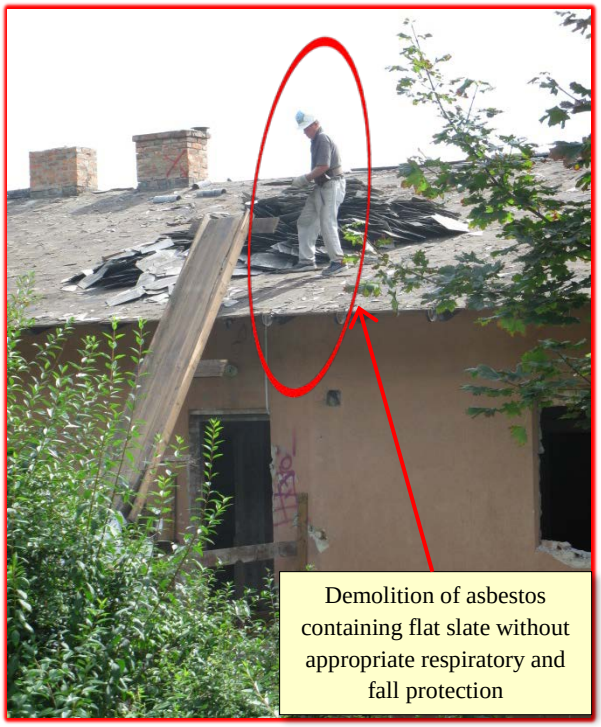
  If the cleaning of cleanable protective clothing is not made by the employer, than it can only be performed by a cleaner with the appropriate equipment, where it must be transported to in a **closed container**.
- the **employees'** dust exposure must be decreased to the minimum, the **time-weighted average** of asbestos exposure of the employee for an **8 hour** period must not exceed **0,1 fibre/cm^3.**
- during the **air quality test** performed after asbestos demolition and removal, the **allowed concentration of asbestos fibre** must be **0,01 fibre/cm^3.**

The personal protection against asbestos must also include the protection of the body, as asbestos fibre stuck on clothing, hair or skin can be brought into our homes as well.

Example for appropriate protection in case of asbestos containing flat slate demolition activities: FFP3 protection providing half mask respiration, hooded jumpsuit protective clothing, protective gloves, protective shoes, protective helmet, fall preventive body harness.

[43] *When designing the double – separated – change rooms (one for work clothes and another for street clothes), the path between the change rooms leads through the sanitary facilities.*

The removed slates and asbestos containing demolition materials and products must be collected enclosed to prevent release of dust, as it poses a risk to the employees and also to the people present within the scope of work. Demolition waste handled as hazardous waste can be transported from the site by a company in possession of the necessary official authorisations to transport hazardous waste to an authorised hazardous waste disposal site.



VI. SPECIAL ACTIVITIES RELATED TO CONSTRUCTION INDUSTRY ACTIVITIES

Material handling

Material handling is an extremely diverse and complex activity, and it is one of the work processes that involve the most types of work equipment.

You can find detailed technical information material on material handling at the http://www.ommf.gov.hu website under *"Munkavédelmi kiadványok"* (Occupational Safety and Health-Related Publications)[44]: *"A gépkezelés biztonságáért. „Kisokos" a gépkezelői munka biztonságának javításáért"* (For the Safe Operation of Machinery. A Practical Guide for Better Job Safety of Machine Operators – available in Hungarian) and at the http://tamop248.hu website under *"Findings/Publications"*[45] (*„A raktározási munkák, és a kézi anyagmozgatás egészségügyi kockázatai"; „Emelőgépek biztonságos használata"; „A szállítás, raktározás baleseti veszélyforrásai"; „A szállítmányozási, raktározási, anyagmozgatási munkafolyamatok főbb veszélyforrásai" – "Health Risks of Warehousing and Manual Handling"; "The Safe Usage of Lifting Machinery"; "Risks of Accidents During Transportation and Warehousing"; "The Main Risks of Haulage, Warehousing and Material Handling Processes"* – all available in Hungarian).

[44] http://www.ommf.gov.hu/index.html?akt_menu=507
[45] http://tamop248.hu/2/index.php/eredmenyek/kiadvanyok?start=20

Storage of materials

Inappropriate storage could be a potential source of danger.

There are rules applicable to the different storage types (bulk, without equipment, in storage equipment):

- The materials stored together must not have a harmful effect on each other.
- The storage areas of the materials must be designated, separated, their orderly storage must be ensured, especially in case of hazardous materials and products.
- The rules for handling and removing hazardous materials, products and hazardous waste must be determined.
- The rules for storing and transporting industrial and communal waste and building rubble must be determined.

Work involving entry

Construction industry activities may also involve entering hazardous equipment. But first of all, what types of work involve entry and what kind of equipment is classified hazardous?

Any activity that needs to be performed by leaning into, or staying inside of an equipment that was not originally designed for human entry, is classified as work involving entry.

Hazardous equipment is any equipment which involves any technological process (e.g. storage, processing, transportation) or activity involving entry, that may pose any hazard or cause any harm (for example, corrosive, toxic, flammable or explosive materials are developed or the oxygen levels in the air drop). Such equipment include containers, bunkers, pits, ducts, boilers, transport containers, silos, open tanks, tankers or confined spaces in general.
The detailed rules of work involving entry to hazardous equipment are regulated by the[46] relevant standard. This standard shall be observed in each case! There are also separate rules[47] in effect with regards to work performed in narrow work areas during construction industry construction!

Caisson work

Underground works are performed most often at transportation (subway construction, tunnel construction), pipeline transport (drinking water, waste water), underground parking garage and underground storage constructions. Flooding and collapsing of solid matter (rocks) are prevented by overpressure (caisson work site).

To prevent the formation of caisson disease during work, the requirements applicable in case of a possibly occurring caisson disease are included in a separate [48]regulation.

[46] *MSZ-09-57.0033:1990 Standard on the Safety Requirements for Work Involving Entry into Hazardous Spaces*
[47] *Chapter I, article 6 of Annex 4 and Chapter II, article 12 of the Joint Decree No. 4/2002. (II. 20.) SzCsM-EüM on the minimum occupational safety and health requirements to be implemented at construction workplaces and during construction processes*
[48] *Decree No. 6/1987. (VI. 24.) EüM on caisson works*

Work-at-height techniques

During construction works, sometimes a certain work task can be solved fastest and simplest by using work-at-height technique. We call work-at-height technique activities those *activities* which are not performed continuously, but with interruptions, where the approaching of a temporary workplace include more than 2 meters of difference in level, where staying, performing the work task and leaving the work place is done by the coordinated and simultaneous use of personal protective equipment and specified equipment (work-at-height technique). During work-at-height technique the risk of falling is increased, therefore special skills are necessary to perform work safely. The detailed provisions are included in a separate [49]regulation.

You can find detailed technical information material on work-at-height technique at the http://www.ommf.gov.hu website under "*Munkavédelmi kiadványok"* (Occupational Safety and Health-Related Publications)[50]: "*Ipari alpintechnika zuhanás veszélyével járó tevékenységek során alkalmazandó egyéni védelmi rendszerek technikája" (Personal protective system technique to be used during industrial work-at-height technique activities with risk of falling).*

Maintenance

Maintenance works and related activities are performed at every workplace. These are often everyday activities. The purpose of maintenance is to ensure that work equipment and facilities remain functional, and thereby maintain productivity as long as possible.

From an occupational safety perspective, it is relevant because the usage of insufficiently maintained work equipment or working in run-down facilities might lead to accidents even if all the relevant rules are observed. For this reason, scheduled preventive maintenance is crucial. However, so-called troubleshooting maintenance activities are also often required. In such cases, malfunction needs to be fixed in a relatively short time.

For individuals performing maintenance activities, often more hazards can be identified than what they might encounter during construction industry activities. For this very reason, it is important that such activities (including welding, repairing electric failures) shall always be performed by personnel who are properly trained and skilled in the given activity.

Detailed technical material on hazards related to maintenance activities can be found at the http://www.ommf.gov.hu website under "*Munkavédelmi kiadványok"*[51] (Occupational safety and health-related publications): "*Karbantartás és munkavédelem"* (Maintenance and Occupational Safety and Health) and "*Biztonságos karbantartás a gyakorlatban*" (Safe Maintenance in Practice) (both available in Hungarian).

[49] *Decree No. 11/2003. (IX. 12.) FMM on safety regulations for industrial rope technique activities*
[50] *http://www.ommf.gov.hu/index.html?akt_menu=507*
[51] *http://www.ommf.gov.hu/index.html?akt_menu=507*

VII. OCCUPATIONAL SAFETY AND HEALTH ACTIVITIES, OCCUPATIONAL HEALTH CARE

The legislation specifies the daily /weekly employment time of occupational safety and health experts based on the number of employees and the hazard class of the employer's activity[52].

The legislation provides relief for employers with less employees and less hazardous activities.
In the case of an employer with up to 9 employees (micro-enterprise), and in case of an employer that – based on the performed activity – falls under hazard class II[53] or III and employs less than 50 people (small enterprise), instead of appointing (employing) an extra individual as an expert, the employer – if the employer is a natural person – can perform the tasks related to carrying out work safely and without risks themselves or have a designated employee perform these tasks. Provided that the employer or the designated person has the knowledge, skills and proficiency required to perform occupational safety and health tasks in considering the employer's actual professional activity.

Duties of an occupational safety expert with an occupational safety qualification:

a) performing a preliminary occupational safety inspection of a hazardous facility, workplace, work equipment, technology [Labour Safety Act, Section 21 (3)],
b) performing periodic safety reviews [Labour Safety Act, Section 23 (1)],
c) participation in the extraordinary inspection of the workplace, personal protective equipment, work equipment, technology [Labour Safety Act, Section 23 (2)],
d) participation in the preparation of the rescue plan [Labour Safety Act, Section 45 (1)],
e) development of the occupational-safety content of the prevention strategy [Labour Safety Act, Section 54 (1) (*g*)],
f) participation in the risk assessment [Labour Safety Act, Section 54 (2)],
g) participation in the occupational safety and health training [Labour Safety Act, Section 55],
h) establishing the internal system for the provision of personal protective equipment [Labour Safety Act, Section 56],
i) investigation of work accidents [Labour Safety Act, Section 64].
j) task of the occupational safety and health coordinator task in the construction industry [SzCsM-EüM[54] Decree 14. §]

The tasks listed in items *a), c), f), h)* are considered to be expert activities related to occupational safety and occupational health.

Employers often do not have an employee who has the qualifications required to perform the tasks of expert activities. In this case these tasks can also be performed by an external service provider under a civil-law contract.

The employer must provide **basic occupational health care service** covering all employees. Occupational health services can be provided through a service provider operated by the employer or under a contract concluded with an external service provider. **Occupational**

[52] *Decree No. 5/1993. (XII. 26.) MüM on implementation of certain provisions of Act XCIII of 1993 on Labour Safety*
[53] *E.g. plant production, stock farming, wildlife management and related services, fishing, fishery management*
[54] *Joint Decree No. 4/2002. (II. 20.) SzCsM-EüM on the minimum occupational safety and health requirements to be implemented at construction workplaces and during construction processes*

health care service assists – with no effect on the responsibilities of the employer – in designing an environment free of health risks, preventing health damage, and perform tasks required by separate regulations and classified as specialised occupational health activities. The employer must ensure that employees and their occupational safety and health representatives are provided with the necessary information about their working conditions by the occupational health service, especially when practicing their rights they are entitled by Section 61 of Labour Safety Act.

Basic tasks of the occupational health service[55]:

a) conducting occupational medical fitness tests and initiating the necessary specialist medical examinations[56],
b) reporting and investigation of occupational diseases and cases of excessive exposure[57],
c) written documentation of the examination of working conditions and the harmful effects of work performance,
d) providing counsel on personal protective equipment[58],
e) tasks related to the chemical safety of workplaces[59],
f) providing information on the employees' health and safety related questions associated with their working conditions,
g) tasks related to job-specific vaccinations[60],
h) preventive care for workers with chronic illnesses,
i) medical fitness test for road transportation vehicle drivers in certain cases[61],
j) expert opinion on employability in cases specified by legislation[62],
k) contribution to the identification of workplace hazards,
l) contribution to the solution of tasks associated with occupational health, physiology, ergonomics, and hygiene,
m) contribution to the provision of material, personal and organizational conditions for workplace first aid, to the organization of emergency medical assistance, to the professional training of first aid responders,
n) contribution to occupational rehabilitation,
o) contribution to the development of the employer's disaster prevention, relief, management plan and rehabilitation plan for suffered damages.

The occupational health care service provider performs a hygiene of work inspection together with the employer. The hygiene of work inspection is a situation assessment that must be performed by the occupational health care service providers to evaluate and manage (decrease) health risks, that makes possible based on the results to initiate the introduction, modification or increasing the efficiency of protective measures. Depending on the experiences on the site, it might be necessary to perform measurements with technical

[55] *Decree No. 27/1995. (VII. 25.) NM on occupational health service*
[56] *Decree No. 33/1998. (VI. 24.) NM on the medical examination of and opinion on fitness for a job or a profession and personal hygiene aptitude*
[57] *Decree No. 27/1996. (VIII. 28.) NM on the reporting and investigation of occupational diseases and excessive exposure*
[58] *Decree No. 65/1999. (XII. 22.) EüM on the minimum safety and health requirements pertaining to personal protective equipment use by employees at the workplace*
[59] *Joint Decree No. 25/2000. (IX. 30.) EüM-SzCsM on the chemical safety of workplaces*
[60] *Decree No. 18/1998. (VI. 3.) NM on the epidemiological measures necessary for the prevention of communicable diseases and epidemics*
[61] *Decree No. 13/1992. (VI. 26.) NM on determining the medical fitness of road transportation vehicle drivers*
[62] *Decree No. 33/1998. (VI. 24.) NM on the medical examination of and opinion on fitness for a job or a profession and personal hygiene aptitude*

instruments to measure exposure with regards to aetiological factors (e.g. exposure to noise, vibration, air pollutants at the workplace).

Occupational safety and health coordinator

It is a special provision for construction works, that the designer when preparing the construction plan documentation and the building contractor employer when performing the construction works must hire (employ or commission) a coordinator. The occupational safety and health coordinator is classified as **special** occupational safety **activity**, therefore the tasks of the coordinator can be performed by the aforementioned occupational safety professional.

The tasks of the coordinator are the following:

a) makes recommendations on how to prepare the construction plan correctly from the aspect of occupational health and safety;
b) professionally supervises the safety and health protection plan;
c) prepares the documentation, in which the appropriate requirements for health and safety are stated based on the characteristics of the construction and the construction technology for the safety of the works to be performed later;
d) coordinates the realisation of the basic principles of prevention and safety, especially:
   - determines the work phases or work stages during the preparation of the construction plans that can only be performed simultaneously or after one another,
   - determines the expected construction period of the separate work phases or work stages.
e) coordinates the realisation of certain requirements to make sure that the employer – and if it is in the interest of the employees – the individual contractors performing the work personally realise the minimum requirements to be provided on the construction work sites and the contents of the safety and health protections plan;
f) under justified circumstances, prepares an addition to the Health and Safety Plan and to the documentation determining the necessary health and safety requirements based on the characteristics of the construction and the construction technology, in order to ensure that – due to the progress of the works and changing of the conditions – they continuously include the requirements for healthy and safe work;
g) collaboration between the employers working at the construction workplace simultaneously or working after one another to coordinate the activities, taking the responsibility regulations stated in Paragraph (2), Section 40 of the Labour Safety Act into account;
h) coordinates the supervision of the work flows;
i) makes the necessary measures in order to make sure that only those who are entitled are able to enter the construction workplace.

Attention! *The assignment or employment of the coordinator does not affect the responsibility of the contractor (employer) and the responsible technical supervisor determined by the occupational safety and health regulations. The justified recommendations of the coordinator are enforced by the responsible technical supervisor as part of his safety-related responsibilities.*

VIII. WORK ACCIDENT, OCCUPATIONAL DISEASE AND EXCESSIVE EXPOSURE

Work accident

Work accident: any accident that happens to the employee during organized employment or in relation thereto, regardless of its location, time or the contribution of the (injured) employee.

An accident happens in relation to work if the employee suffers an accident during employment-related transport, material sampling, material handling, showering, organized canteen meals, using occupational health services or other services etc. offered by the employer.

An accident cannot be considered a work-related accident (work accident) if it happens on the way from the employee's home (lodging) to work, or on the way home (or to the lodging) from work, except for cases when the employer's own or rented vehicle was involved in the accident.

Attention!
Work accidents are not to be confused with industrial accidents.
The term "industrial accident" belongs to the field of social security, and its definition can be found in Act LXXXIII of 1997 on the Services of the Compulsory Health Insurance System (Sections 52 and 53). Industrial accidents do not form a subject of this publication.

The person who got injured in the accident or witnessed it, shall report the accident without delay, to the person who directly supervises the work. It is important to make the employees aware of this responsibility, because, if someone fails to do so, it's up to the injured employee to prove that the accident happened during work or in relation to work.

Each case an accident is reported or otherwise becomes known to the employer, the employer shall determine whether it should be considered a work accident. If the employer doesn't consider it a work accident, (s)he shall inform the injured person (or a family member in case of a fatal accident) on this decision and on further available legal remedies.

Any work accident that causes incapacity shall be investigated by the employer without delay, and the findings of the investigation shall be recorded in a work accident protocol.

The occupational health medical practitioner shall be informed on the commencement of the investigation.
It is at the doctor's discretion to decide whether a doctor should be involved in the investigation.

The circumstances should also be clarified in cases when the accident did not lead to incapacity, but in such cases, issuing a work accident protocol is not necessary.

Any work accident that results in more than 3 workdays of incapacity, as well as cases of occupational disease or excessive *exposure shall be reported, investigated and registered.*

A separate work accident protocol shall be issued on each injured person, and the protocol shall be sent once the investigation is concluded, but by no later than the 8th day of the reference month, to the following parties:

- to the injured person or to a relative, in case of a fatal accident;
- to the relevant authority for occupational health and safety based on the location of the work accident, in case of fatal work accidents or work accidents that cause incapacity for more than 3 workdays;
- in case of any accident that is listed in point *b)* and involved an employee of a Hungary-based employer on a foreign assignment, external service or temporary employment: to the relevant authority for occupational health and safety, or the mining authority relevant based on the employer's registered seat;
- to the social insurance cash benefit disbursement location or, in absence thereof, to the district office acting on behalf of the government office of Budapest and the relevant county in health insurance cash disbursement matters;
- to the employment agency or the assigner in case of temporary employment or assignment.

The duration of incapacity may not be known by the date the investigation is concluded, or the work accident protocol may need to be amended for any reason later on. In such cases the employer shall send the protocol that contains the total number of days of incapacity, or the protocol on amended content.

The employer shall report each severe work accident without delay, and with all available data included, to the district office acting on behalf of the relevant occupational health and safety government office of Budapest and the county based on the location of the accident.

A work accident is severe if it leads to any of the following:
• the death of the injured person (in case the injured person dies within a year from the date of the accident, and it is stated in the medical report that the cause of death was related to the accident,
the accident is also considered a fatal work accident); the death of a foetus or new-born baby of the injured person; permanent damage which impedes self-sufficient lifestyle;
• the loss of, or significant damage to any sensory organ, sensory capacity or reproductive capacity;
• life-threatening injury or damage to health, that is supported by a medical report;
• loss of thumb(s) or loss of the larger parts of 2 or more fingers or toes, or more severe mutilation;
• loss of speech; remarkable distortion, paralysis or derangement.

In case of a severe work accident, once the rescue activities are finished, the employer shall keep the location of the accident in the same condition as it was when the accident happened, until the representatives of the authority for occupational health and safety arrive.
If the preservation of the accident conditions would pose further severe hazards or cause significant material damage, photos or videos shall be made on the location of the work accident, or any other type of records which can aid the investigation.

The employer is not entitled to refuse the investigation of a severe work accident based on the fact that it is already being investigated by the authorities, or they are waiting for the investigation findings of other authorities (e.g. the police). Even in such cases the employer

shall conduct an internal investigation, and conclude it by the specified deadline. The work accident protocol can be modified if new facts or data become known.

In case of a severe work accident, the doctor of the basic occupational health service provider shall take part in the investigation.

Occupational disease and excessive exposure

Burdens arising from work and aetiological factors arising from work environment mean a greater exposure and risk of formation of occupational diseases in case of inappropriate preventive measures (lack of technical protection, personal protection, work instructions, skipping occupational safety and health training, medical examination of fitness for a job).

Occupational disease: acute or chronic damage to health that occurred during work, or chronic damage to health that appeared or developed after work, which:
a) can be traced back to work-related physical, chemical, biological, psychosocial or ergonomic aetiological factors that are present during work processes or activities, or
b) resulted from exertion of the employee that is larger or smaller than the optimum.

Excessive exposure: if the concentration levels or measures of certain biological exposure (impact) markers that shall be assessed in case of occupational chemical exposure as per the ministerial decree on the chemical safety of workplaces exceed the biological thresholds in the body of the employee during work or in relation thereto; or, in case of noise, a hearing loss of 30 dB on 4000 Hz in any ear.

Contact opportunities with hazardous materials during work increase the possibility of inhaling toxic, allergenic chemical substances, irritating dust, carcinogens (e.g. organic solvents, cement powder, quartz powder, asbestos), which can lead to the formation of different **respiratory diseases** (allergy, asthma, silicosis, asbestosis, mesothelioma after inhaling asbestos dust).
Inhaling irritating welding fumes can cause acute irritation of the respiratory tracts. Irritants can also exacerbate already present respiratory problems /e.g. asthma, chronic obstructive pulmonary disease (COPD)/. Exposure to welding fumes for a longer duration can also cause chronic effects /e.g. chronic bronchitis/ on the respiratory track.

Dusts, organic solvents affecting the respiratory organ can cause also **dermatological changes** (contact and irritative allergic dermatitis).
Chronic or repeated exposure of the skin to mild irritants can cause contact dermatitis (eczema). Such irritants are for example solvents, epoxy resins, cement.

Besides respiratory and dermatological illnesses also the formation of **musculo-skeletal disorders** must be taken into account for people employed in the construction industry, which can be traced back to overexertion, manual handling of loads, asymmetrical or repetitive movements or a cold and moist work environment in winter.
Back injuries mainly lead to the injury of the spine and the soft tissue next to it (strain, tear, haemorrhage) and to the formation of illnesses causing permanent pathological conditions.

Long-lasting exposure to noise that exceed the thresholds can cause **excessive exposure to noise** and **hearing impairment** caused by noise.

Vibration burden caused by manual tools, machines, depending on the exposure to vibration **hand-arm vibration syndrome**, or a vibration disease affecting the whole body can occur.

If any occupational disease, acute or chronic poisoning or excessive exposure to noise or any of the chemicals listed in the relevant law is detected during occupational medical practice, it shall be reported to the relevant district office of the government office of Budapest and the county based on the registered seat of the employer, as the relevant authority for occupational health and safety.

Any physician can report who is in medical practice and diagnosed an occupational disease or discovered excessive exposure or suspicion thereof.

Further detailed requirements on reporting, investigation and employer responsibilities are governed by the relevant law[63].

IX. OCCUPATIONAL SAFETY AND HEALTH REPRESENTATIVE

Attention!
An occupational safety expert is not the same as the occupational safety and health representative.

An occupational safety and health representative is a person who has been elected by the employees and represents employee rights and interests related to safe and health risk-free performance of work in cooperation with the employer.

To ensure safe and health risk-free work, the employer shall consult the employees or their occupational safety and health representatives, and offer them the opportunity in a timely manner, to take part in the preliminary discussion on the health and safety-related measures the employer is planning to take.

An occupational safety and health representative shall be elected at each employer who employs 20 or more employees. Conducting the election and fulfilling the necessary requirements is the employer's responsibility. An occupational safety and health representative may be elected below 20 capita as well, if the employees express the need for having one.

The occupational safety and health representative is an intermediary between the employees and the employer.

Within one year of election, the occupational safety and health representative shall complete a 16-hour training, and take part in an 8-hour refreshment training each year later on. As a result of ongoing training, the occupational safety and health representative is capable of

[63] *Decree No. 27/1996. (VIII.28.) NM on the reporting and investigation of occupational diseasees and cases of excessive exposure*

expressing occupational safety-related issues of the employees in a sophisticated and professional manner.

The occupational safety and health representative takes load off the employer's shoulders: (s)he is much more aware of the occupational safety and health gaps that may be present at the workplace, and is more up-to-date on the issues of the employees than the employer or the occupational safety expert. Therefore, (s)he can contribute to solving those problems effectively, and faster results can be achieved in improving the working conditions.

Regarding the election of the occupational safety and health representative, the information and recommendation[64] of the National Occupational Safety and Health Committee as the highest national forum of alignment of interests can be found at the website http://www.ommf.gov.hu under *"Országos Munkavédelmi Bizottság"* (available in Hungarian).

[64] *http://www.ommf.gov.hu/index.html?akt_menu=529*